

The Bean Game: A Role-play Simulation

AZ State standards:

- Analyze the relationship among various organisms and their environment; analyze the interactions of living organisms with their ecosystems including limiting factors and carrying capacity
- Apply the economic concepts of scarcity and choice, with emphasis on how limited resources and unlimited human wants cause people to choose some things and give up others.
- Explain the effects of interactions between human and natural systems including the changes in the meaning, use, and distribution of natural resources, with emphasis on how and why humans modify ecosystems, including deforestation and desertification

Essential questions:

What effects do the values and actions of one generation have on subsequent generations? What effects does technology have on the environment?

Class structure and materials:

- ❖ 4 people per table/group with each person representing 4 different generations (Great grandmother/father, Grandmother/father, mother/father, daughter/son)
- ❖ 2 large tubs filled with beans
- ❖ various utensils (teaspoon, tweezers, small coffee scoop, tongue depressor) Distribute one kind of utensil to each family (i.e. one family of four receives four sets of tweezers).

Instructions:

1. Each tray of beans represents natural resources. Ask students to share examples of natural resources—it is optional to ask students to differentiate between renewable and nonrenewable.
2. Explain how each family is part of a community that relies on the natural resource in the tray. The beans represent all kinds of natural resources. Each person in each family needs beans to live.
3. There will be four rounds of this game.
 - The first round is the first generation (great grandmother/father).
 - The second round is the second generation (grandmother/father).
 - The third round is the third generation (mother/father).
 - The fourth round is the fourth generation (daughter/son).
4. During each round, each family member will have the opportunity to extract the natural resources (beans) for 10 seconds using a utensil. During each round family members will “Take out as many beans as you care to.”
5. After each round, ask family groups to graph results over time. Family members will record results for each generation on a behavior-over-time-graph.

Debrief:

What similarities or differences did you notice between generations?

What similarities or differences did you notice between families?

Why would a particular generation or family want to consume as many natural resources as possible?

Are there any reasons why a particular generation or family would want to conserve their natural resources?

What would happen if we use our natural resources faster than they can be replaced?

Can you think of examples where this has already occurred?